

Red River Authority of Texas Clean Rivers Program



AQUATIC LIFE MONITORING



APRIL 10, 2018

**JOSE MARTINEZ
RED RIVER AUTHORITY OF TEXAS
CRP PROJECT SUPERVISOR**

SegID: 0214

Wichita River Below Diversion Lake Dam

From the confluence with the Red River in Clay County to Diversion Dam in Archer County

Segment Type Freshwater Stream

AU_ID: 0214_01 *From the confluence with the Red River upstream to the confluence with an un-named tributary immediately upstream of FM 2393*

<u>Flow Type</u>	<u>Flow Type Source</u>	<u>ALU Designation</u>	<u>ALU Designation Source</u>
perennial	TSWQS	High	TWQS-Appendix A

Station ID(s): 10145

AU_ID: 0214_02 *From an un-named tributary immediately upstream of FM 2393 upstream to the River Road WWTP*

<u>Flow Type</u>	<u>Flow Type Source</u>	<u>ALU Designation</u>	<u>ALU Designation Source</u>
perennial	TSWQS	High	TWQS-Appendix A

Station ID(s): 10148; 10149

AU_ID: 0214_03 *From the River Road WWTP upstream to the confluence with Buffalo Creek*

<u>Flow Type</u>	<u>Flow Type Source</u>	<u>ALU Designation</u>	<u>ALU Designation Source</u>
perennial	TSWQS	High	TWQS-Appendix A

Station ID(s): 10150; 10151; 10152; 10153; 15999; 16734; 16735; 18832; 20321

AU_ID: 0214_04 *From the confluence with Buffalo Creek upstream to the confluence with Beaver Creek*

<u>Flow Type</u>	<u>Flow Type Source</u>	<u>ALU Designation</u>	<u>ALU Designation Source</u>
perennial	TSWQS	High	TWQS-Appendix A

Station ID(s): 10154

AU_ID: 0214_05 *From the confluence with Beaver Creek upstream to the Diversion Lake Dam*

<u>Flow Type</u>	<u>Flow Type Source</u>	<u>ALU Designation</u>	<u>ALU Designation Source</u>
perennial	TSWQS	High	TWQS-Appendix A

Station ID(s): 10155; 10156

Biological Monitoring



- Aquatic Life Monitoring on Beaver Creek (15120) and Wichita River (10145)
- Biological Assessments
 - Aquatic Life Use – Attainability Analyses
 - Receiving – Water Assessments
 - Aquatic Life Monitoring
 - Aquatic Life Assessments

Biological Monitoring



- Index Period
 - Help determine ALUs or to evaluate support of existing ALUs
 - Includes Critical Period and Non-critical Period
 - March 15 – October 15
- Critical Period
 - July 1- Sept 30
- Non-Critical Period
 - March 15 – June 30, and Oct 1 – Oct 15

Biological Monitoring



- **Aquatic – Life Monitoring**

- Characterization of the fish assemblage
- Characterization of the benthic macroinvertebrate community
- Assessment of the stream's physical habitat
- Instantaneous field measurements
- Measurement of flow discharge
- 24 –Hour Dissolved Oxygen monitoring
- Conventional water chemistry sample

Wolf Creek LDS Study



Wolf Creek LDS Study



White Deer Creek LDS Study



White Deer Creek LDS Study



Wolf Creek LDS Study



White Deer Creek LDS Study



Beaver Creek at FM 2326

TCEQ ID – 15120



- The Authority and the Environmental Institute of Houston-Clear Lake Conducted 2 Biological Events
 - June 2017 (index period)
 - July 2017 (critical period)



Beaver Creek at FM2326

TCEQ ID – 15120



Parameter	Index	Critical
Instantaneous Flow	29.1 cfs	11.4 cfs
Water Temperature °C	32.00	30.20
Diel Specific Conductance	3,112 µs/cm	3,603 µs/cm
Diel DO	8.28 mg/L	6.93 mg/L
Water pH	8.15	7.77
<i>E. coli</i>	21 MPN/100mL	190 MPN/100mL
Total Dissolved Solids	1,640 mg/L	2,660 mg/L
Total Phosphorus	0.135 mg/L	0.122 mg/L
TKN	1.4 mg/L	1.37 mg/L

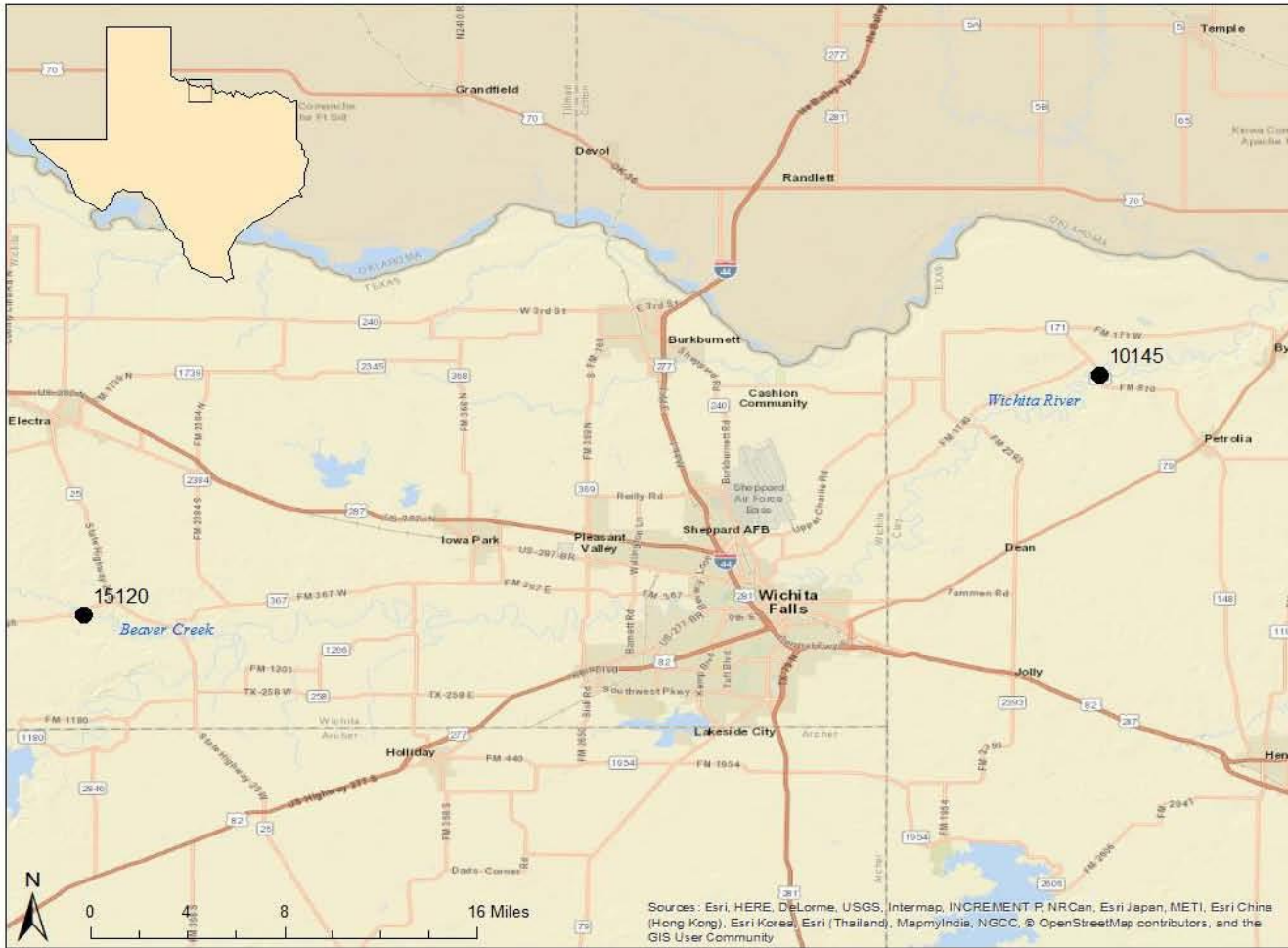


Figure 1 Map of overall sample area.



Figure 2 Sample reach map for index event showing location of physical habitat transects, benthic macroinvertebrate sampling, 24hr Dissolved oxygen, and conventional water sampling locations.

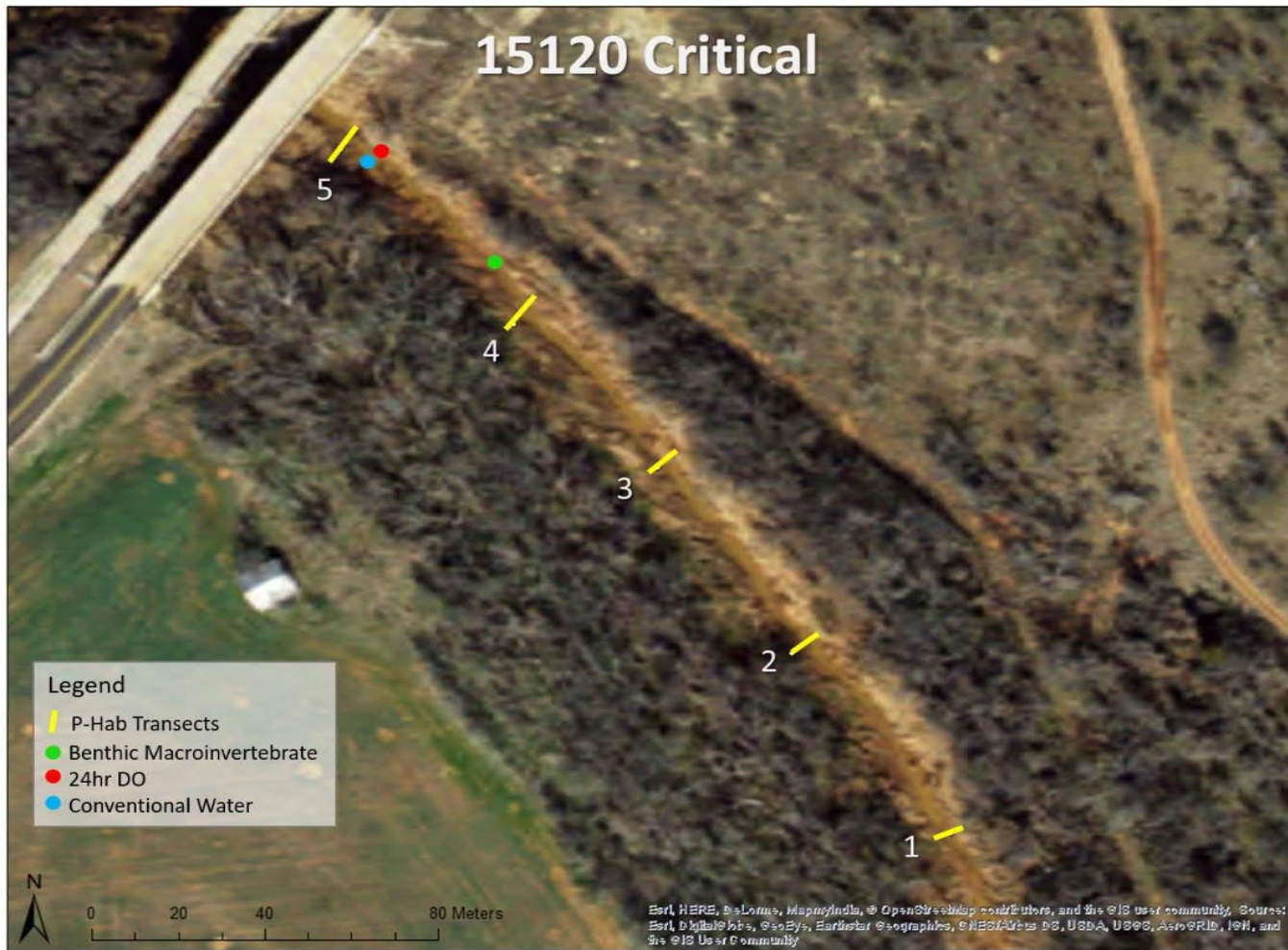


Figure 3 Sample reach map for critical event showing location of physical habitat transects, benthic macroinvertebrate sampling, 24hr Dissolved oxygen, and conventional water sampling locations.

Nekton Community IBI Data, Summary Data, and Species Lists

Ecoregion 27 Nekton IBI			
Date	06/13/2017	TCEQ ID	15120
Site	Beaver Creek at FM 2326		
Metric	Value	Score	
Total Number of Fish Species	11	3	
Number of Native Cyprinid Species	5	5	
Number of Benthic Invertivore Species	0	1	
Number of Sunfish Species	2	3	
% of Individuals as Tolerant Species ^a	64.1	1	
% of Individuals as Omnivores	20.4	1	
% of Individuals as Invertivores	66.7	5	
% of Individuals as Piscivores	12.9	5	
Number of Individuals in Sample	309	2	
Number of Individuals/seine haul	33.8	1	
Number of Individuals/min electrofishing	7.0	3	
% of Individuals as Non-native Species	0.0	5	
% of Individuals With Disease/Anomaly	0.6	3	
Regional Score and Aquatic Life Use	36	Intermediate	
^a not including <i>G. affinis</i>			
Scoring Criteria			
Exceptional		> 49	
High		39 – 48	
Intermediate		31 – 38	
Limited		< 31	

Nekton Summary Data			
Date	06/13/2017	TCEQ ID	15120
Site	Beaver Creek at FM 2326		
Description	STORET	Value	
Stream order	84161	4	
Minimum seine mesh diagonal (cm)	89930	0.125	
Maximum seine mesh diagonal (cm)	89931	0.125	
Seine length (m)	89941	4.572	
Electrofishing method (1=boat, 2=backpack)	89943	3	
Electrofishing effort (sec)	89944	906	
Seining effort (number of hauls)	89947	6	
Combined length of seine hauls (m)	89948	60	
Seining effort (duration, minutes)	89949	3.42	
Ecoregion	89961	27	
Area seined (m ²)	89976	274.32	
Total fish species (n)	98003	11	
Number of sunfish species (n)	98008	2	
Total intolerant species (n)	98010	0	
Omnivore individuals (%)	98017	20.4	
Invertivore individuals (%)	98021	66.7	
Piscivore individuals (%)	98022	12.9	
Individuals with disease or anomaly (%)	98030	0.6	
Number of native cyprinid species (n)	98032	5	
Individuals as non-native species (%)	98033	0	
Total individuals seining (n)	98039	203	
Total individuals electroshocking (n)	98040	106	
Number of benthic invertivores (n)	98052	NA	
Individuals per seine haul (n)	98062	33.8	
Individuals per minute electroshocking (n)	98069	7	
Tolerant individuals (except <i>G. affinis</i>) (%)	98070	64.1	

SPECIES LIST AND ABUNDANCE- NEKTON

Date 6/13/2017
Site Beaver Creek at FM 2326
TCEQ ID 15120

	Collection Method	(E = electro, S = seine)	E1	E2	E3	ES	S1	S2	S3	S4	S5	S6	Seine	
	Collection Effort	(for E: sec; for S: meters)	302	303	301	906	10	10	10	10	10	10	60	
STORET	Scientific Name	Common Name				Total							Total	Overall Total
98474	<i>Cyprinella lutrensis</i>	Red shiner	5	26	2	33	3	15	18	9	13	6	64	97
98430	<i>Dorosoma cepedianum</i>	Gizzard shad	0	0	0	0	0	1	0	0	2	0	3	3
98713	<i>Gambusia affinis</i>	Western mosquitofish	6	43	18	67	0	1	17	0	2	1	21	88
98562	<i>Ictalurus furcatus</i>	Blue catfish	0	0	0	0	0	0	2	0	0	0	2	2
98561	<i>Ictalurus punctatus</i>	Channel catfish	0	0	0	0	0	2	0	1	0	0	3	3
99094	<i>Lepomis cyanellus</i>	Green sunfish	9	10	16	35	0	0	1	0	2	0	3	38
99101	<i>Lepomis miniatus</i>	Redspotted sunfish	0	1	0	1	0	0	0	0	0	0	0	1
99092	<i>Lepomis sp.(unknown)</i>	Sunfish species	0	0	0	0	0	0	0	1	0	0	1	1
98467	<i>Notropis buchanani</i>	Ghost shiner	0	1	0	1	1	0	5	0	0	0	6	7
98457	<i>Phenacobius mirabilis</i>	Suckermouth minnow	3	1	1	5	0	0	0	2	0	1	3	8
98497	<i>Pimephales promelas</i>	Fathead minnow	7	18	32	57	0	0	0	0	0	0	0	57
98498	<i>Pimephales vigilax</i>	Bullhead minnow	2	0	2	4	0	0	0	0	0	0	0	4
	Total Collected					203							106	309
	Total Taxa					8							9	12

Ecoregion 27 Nekton IBI			
Date	07/18/2017	TCEQ ID	15120
Site	Beaver Creek at FM 2326		
	Metric	Value	Score
	Total number fish species	14	5
	Number native cyprinid species	6	5
	Number benthic invertivore species	0	1
	Number sunfish species	3	3
	Number intolerant species	0	1
	Percent individuals as tolerant ^a	52.6	1
	Percent individuals as omnivores	7.2	5
	Percent individuals as invertivores	89.2	5
	Number individuals in sample	739	1
	Individuals per seine haul	91.8	1
	Individuals per min electrofishing	9.3	1
	Percent individuals as non-natives	0.1	5
	Percent individuals with disease or anomalies	0.4	5
	Regional Score and Aquatic Life Use	46	High
^a not including <i>G. affinis</i>			
Scoring Criteria			
Exceptional			> 49
High			39 – 48
Intermediate			31 – 38
Limited			< 31

Nekton Summary Data			
Description	STORET	Value	
Stream order	84161	4	
Minimum seine mesh diagonal (cm)	89930	0.125	
Maximum seine mesh diagonal (cm)	89931	0.125	
Seine length (m)	89941	4.572	
Electrofishing method (1=boat, 2=backpack)	89943	3	
Electrofishing effort (sec)	89944	1213	
Seining effort (number of hauls)	89947	6	
Combined length of seine hauls (m)	89948	60	
Seining effort (duration, minutes)	89949	2.05	
Ecoregion	89961	27	
Area seined (m ²)	89976	230	
Total fish species (n)	98003	14	
Number of sunfish species (n)	98008	3	
Total intolerant species (n)	98010	0	
Omnivore individuals (%)	98017	7.2	
Insectivore individuals (%)	98021	89.2	
Piscivore individuals (%)	98022	3.7	
Individuals with disease or anomaly (%)	98030	0.4	
Number of native cyprinid species (n)	98032	6	
Individuals as non-native species (%)	98033	0.1	
Total individuals seining (n)	98039	551	
Total individuals electroshocking (n)	98040	188	
Number of benthic invertivores (n)	98052	NA	
Individuals per seine haul (n)	98062	91.8	
Individuals per minute electroshocking (n)	98069	9.3	
Tolerant individuals (except <i>G. affinis</i>) (%)	98070	52.6	

SPECIES LIST AND ABUNDANCE - NEKTON

Date 7/18/2017
Site Beaver Creek at FM 2326
TCEQ ID 15120

	Collection Method	(E = electro, S = seine)	E1	E2	E3	E4	ES	S1	S2	S3	S4	S5	S6	Seine	
	Collection Effort	(for E: sec; for S: meters)	300	307	303	303	1213	10	10	10	10	10	10	60	Overall
STORET	Scientific Name	Common Name					Total							Total	Total
98474	Cyprinella lutrensis	Red shiner	9	8	16	33	66	16	150	16	14	30	11	237	303
98437	Cyprinus carpio	Common carp	0	0	1	0	1	0	0	0	0	0	0	0	1
98713	Gambusia affinis	Western mosquitofish	5	5	8	11	29	17	50	27	17	24	22	157	186
98562	Ictalurus furcatus	Blue catfish	0	0	2	0	2	0	0	0	0	0	0	0	2
98561	Ictalurus punctatus	Channel catfish	0	0	4	1	5	5	3	3	14	9	1	35	40
98340	Lepisosteus oculatus	Spotted gar	0	0	1	0	1	0	0	0	0	0	0	0	1
99094	Lepomis cyanellus	Green sunfish	0	6	5	5	16	2	2	1	3	0	0	8	24
99097	Lepomis macrochirus	Bluegill	8	0	0	0	8	0	0	0	0	0	0	0	8
99099	Lepomis megalotis	Longear sunfish	0	1	0	0	1	0	0	0	1	0	0	1	2
99092	Lepomis sp. (unknown)	Sunfish species	0	0	0	2	2	1	0	0	0	0	0	1	3
98463	Notropis bairdi	Red River shiner	1	0	0	0	1	0	0	0	0	0	0	0	1
98467	Notropis buchanani	Ghost shiner	1	0	0	0	1	0	0	0	0	0	0	0	1
98457	Phenacobius mirabilis	Suckermouth minnow	0	0	3	13	16	2	0	0	0	0	0	2	18
98497	Pimephales promelas	Fathead minnow	1	0	0	6	7	2	1	0	2	0	0	5	12
98498	Pimephales vigilax	Bullhead minnow	9	6	5	12	32	4	10	29	43	11	8	105	137
Total Collected							188							551	739
Total Taxa							15							9	15

Critical Period



Ictalurus furcatus (Blue Catfish) captured with totebarge electroshocker.

Benthic Community IBI Data, Summary Data, and Species Lists

Qualitative Benthos IBI			
Date	6/13/2017	TCEQ ID	15120
Site	Beaver Creek at FM 2326		
Metric	Value	Score	
Taxa Richness	15	3	
EPT Taxa Abundance	8	3	
Biotic Index (HBI)	5.42	1	
% Chironomidae	38.53	1	
% Dominant Taxon	53.97	2	
% Dominant FFG	53.97	2	
% Predators	13.28	4	
Intolerant : Tolerant	0.85	1	
% Total Trichoptera as Hydropsychidae	100	1	
# of Non-Insect Taxa	3	2	
% Collector-Gatherers	23.67	3	
% of Total Number as Elmidae	3.03	4	
AQUATIC LIFE USE SCORE	27		
AQUATIC LIFE USE RATING	Intermediate		
Scoring Criteria			
Exceptional	>36		
High	29 - 36		
Intermediate	22 - 28		
Limited	<22		

Benthos Summary Data			
Date	6/13/2017	TCEQ ID	15120
Site	Beaver Creek at FM 2326		
Description	STORET	Value	
Stream order	84161	4	
Data reporting units	89899	1	
Kicknet effort (m²)	89903	5.5	
Kicknet effort (min)	89904	5.7	
Debris/shoreline effort, min picked (min)	89905	0	
Total n for sample (n)	89906	231	
Gravel substrate (%)	89923	10	
Macrophyte bed (%)	89926	0	
Snags and brush (%)	89927	10	
Bedrock (%)	89928	0	
Net mesh size (cm)	89946	0.05	
Benthic sampler	89950	3	
Ecoregion	89961	27	
HBI	90007	5.42	
EPT index (n)	90008	8	
Dominant FFG (%)	90010	53.97	
Collector-gatherers (%)	90025	23.67	
Predators (%)	90036	13.28	
Dominant taxon (%)	90042	38.53	
Intolerant : Tolerant taxa	90050	0.85	
Non-insect taxa (n)	90052	3	
n as Elmidae (%)	90054	3.03	
Taxa richness (n)	90055	15	
Chironomidae (%)	90062	0	
Trichoptera as Hydropsychidae (%)	90069	100	

Qualitative Benthos IBI			
Date	7/18/2017	TCEQ ID	15120
Site	Beaver Creek at FM 2326		
Metric	Value	Score	
Taxa Richness	18	3	
EPT Taxa Abundance	7	3	
Biotic Index (HBI)	5.30	1	
% Chironomidae	9.27	3	
% Dominant Taxon	28.29	3	
% Dominant FFG	38.70	3	
% Predators	6.99	4	
Intolerant : Tolerant	1.62	2	
% Total Trichoptera as Hydropsychidae	100.00	1	
# of Non-Insect Taxa	4	3	
% Collector-Gatherers	32.36	2	
% of Total Number as Elmidae	14.15	3	
AQUATIC LIFE USE SCORE		31	
AQUATIC LIFE USE RATING		High	
Scoring Criteria			
Exceptional	>36		
High	29 - 36		
Intermediate	22 - 28		
Limited	<22		

Benthos Summary Data			
Date	07/18/2017	TCEQ ID	15120
Site	Beaver Creek at FM 2326		
Description	STORET	Value	
Stream order	84161	4	
Data reporting units	89899	1	
Kicknet effort (m²)	89903	4.5	
Kicknet effort (min)	89904	5.67	
Debris/shoreline effort, min picked (min)	89905	0	
Total n for sample (n)	89906	205	
Gravel substrate (%)	89923	10	
Macrophyte bed (%)	89926	0	
Snags and brush (%)	89927	7	
Bedrock (%)	89928	0	
Net mesh size (cm)	89946	0.05	
Benthic sampler	89950	3	
Ecoregion	89961	27	
HBI	90007	5.30	
EPT index (n)	90008	7	
Dominant FFG (%)	90010	38.70	
Collector-gatherers (%)	90025	32.36	
Predators (%)	90036	6.99	
Dominant taxon (%)	90042	28.29	
Intolerant : Tolerant taxa	90050	1.62	
Non-insect taxa (n)	90052	4	
n as Elmidae (%)	90054	14.15	
Taxa richness (n)	90055	18	
Chironomidae (%)	90062	9.27	
Trichoptera as Hydropsychidae (%)	90069	100	

Physical Habitat IBI Data, Summary Data, and Transect Data

Habitat Quality Index		
Date	06/13/2017	
Site	Beaver Creek at FM 2326	
TCEQ ID	15120	
Metric	Value	Score
Instream Cover, mean (%)	6	1
Riffles, number of	0	1
Pools, maximum depth (m)	4.50	4
Bank Stability	—	1
Slope component, mean angle (°)	30.80	—
Erosion component, mean (%)	54.20	—
Riparian Buffer Vegetation, mean width (m)	>18.5	2
Channel Flow Status (4=High, 3=Moderate, 2=Low, 1=No flow)	3	3
Channel Sinuosity	1	1
Bottom Substrate, mean gravel or larger (%)	1.2	1
Aesthetics (1=Wilderness, 2=Natural, 3=Common, 4=Offensive)	2	2
AQUATIC LIFE USE SCORE	16	
AQUATIC LIFE USE RATING	Intermediate	
Scoring Criteria		
Exceptional	26 - 31	
High	20 - 25	
Intermediate	14 - 19	
Limited	< 14	

Habitat Quality Index		
Date	7/18/2017	
Site	Beaver Creek at FM 2326	
TCEQ ID	15120	
Metric	Value	Score
Instream Cover, mean (%)	5.6	1
Riffles, number of	2	3
Pools, maximum depth (m)	1.01	3
Bank Stability	—	2
Slope component, mean angle (°)	26.75	—
Erosion component, mean (%)	59.00	—
Riparian Buffer Vegetation, mean width (m)	>18.5	3
Channel Flow Status (4=High, 3=Moderate, 2=Low, 1=No flow)	2	2
Channel Sinuosity	1	1
Bottom Substrate, mean gravel or larger (%)	2.6	1
Aesthetics (1=Wilderness, 2=Natural, 3=Common, 4=Offensive)	2	2
AQUATIC LIFE USE SCORE	18	
AQUATIC LIFE USE RATING	Intermediate	
Scoring Criteria		
Exceptional	26 - 31	
High	20 - 25	
Intermediate	14 - 19	
Limited	< 14	

Site Photographs

Index – Transect 1

(Bottom of reach)



Upstream taken from transect 1 during index period.



Right bank taken from transect 1 during index period.



Left bank taken from transect 1 during index period.



Downstream taken from transect 1 during index period.

Wichita River at FM 810

TCEQ ID - 10145



- The Authority and the Environmental Institute of Houston – Clear Lake conducted 2 Biological events
 - June 2017 (index period)
 - July 2017 (critical period)



Wichita River at FM 810

TCEQ ID - 10145



Parameter	Index	Critical
Instantaneous Flow	248 cfs	103 cfs
Water Temperature °C	29.20	30.20
Diel Specific Conductance	2,083 µs/cm	2,767 µs/cm
Diel DO	8.75 mg/L	8.08 mg/L
Water pH	8.32	8.49
<i>E. coli</i>	76 MPN/100mL	180 MPN/100mL
Total Dissolved Solids	1,140 mg/L	2,934 mg/L
Total Phosphorus	0.415 mg/L	0.476 mg/L
TKN	2.52 mg/L	2.23 mg/L

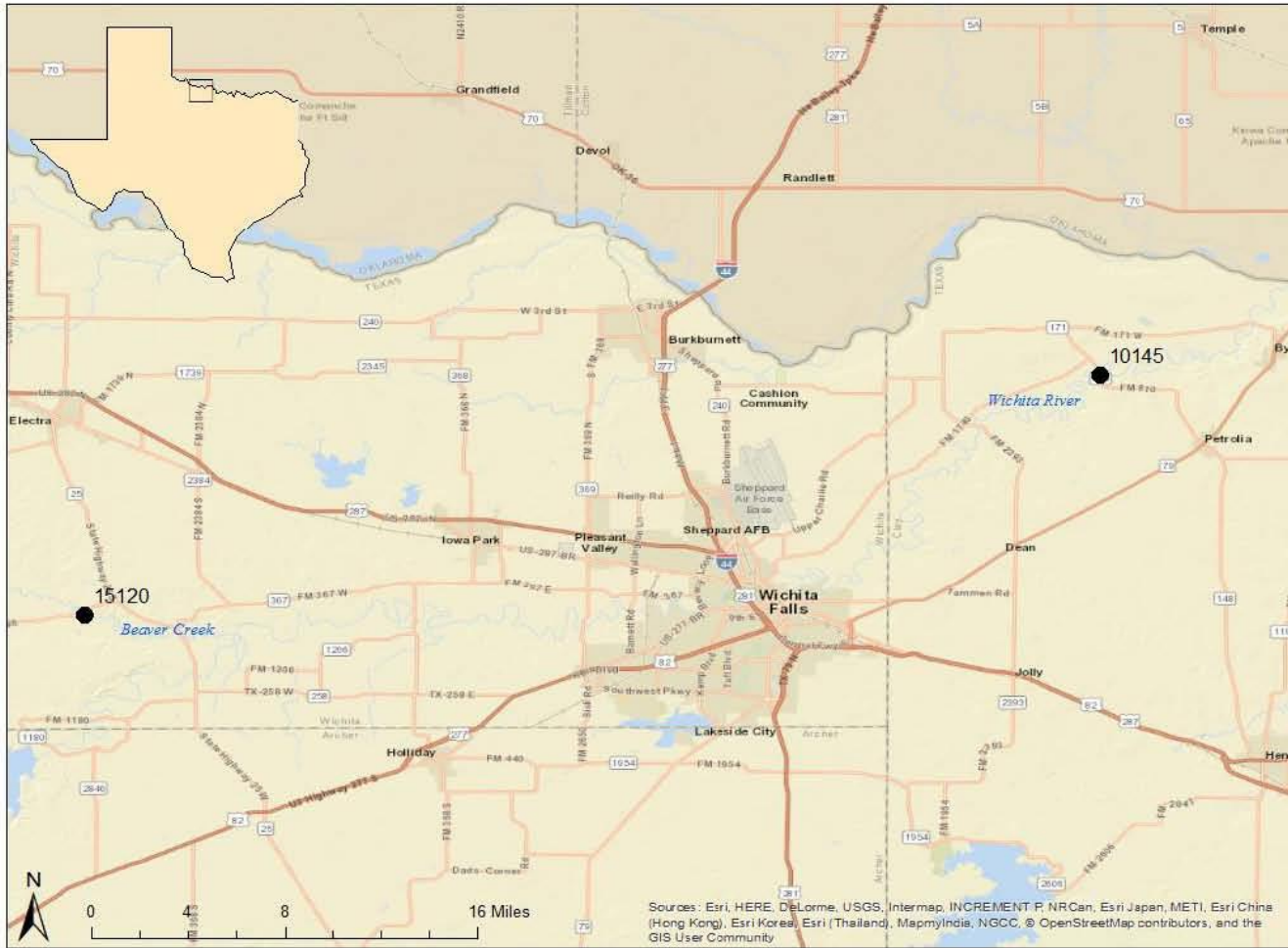


Figure 1 Map of overall sample area.

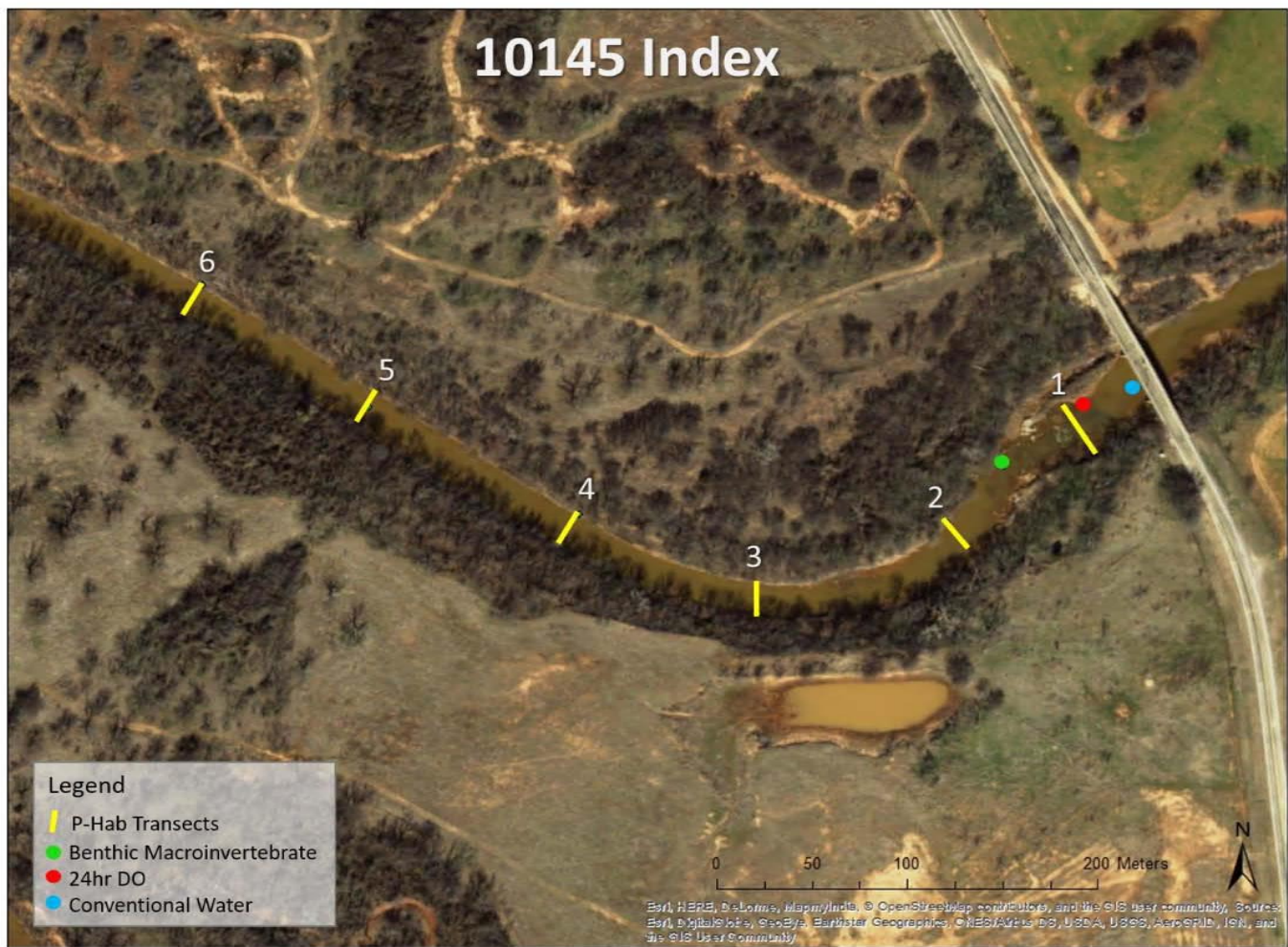


Figure 2 Sample reach map for index event showing location of physical habitat transects, benthic macroinvertebrate sampling, 24hr dissolved oxygen, and conventional water sampling locations.

Nekton Community IBI Data, Summary Data, and Species Lists

Ecoregion 27 Nekton IBI			
Date	06/14/2017	TCEQ ID	10145
Site	Wichita River at FM 810		
Metric	Value	Score	
Total Number of Fish Species	9	3	
Number of Native Cyprinid Species	3	3	
Number of Benthic Invertivore Species	0	1	
Number of Sunfish Species	2	3	
% of Individuals as Tolerant Species ^a	77.4	1	
% of Individuals as Omnivores	14.5	3	
% of Individuals as Invertivores	69.4	5	
% of Individuals as Piscivores	16.1	5	
Number of Individuals in Sample	--	--	
Number of Individuals/seine haul	1.3	1	
Number of Individuals/min electrofishing	2.7	1	
% of Individuals as Non-native Species	3.2	1	
% of Individuals With Disease/Anomaly	0.0	5	
Regional Score and Aquatic Life Use	32	Limited	
^a not including <i>G. affinis</i>			
Scoring Criteria			
Exceptional		> 49	
High		41 – 48	
Intermediate		35 – 40	
Limited		< 35	

Nekton Summary Data			
Date	06/14/2017	TCEQ ID	10145
Site	Wichita River at FM 810		
Description	STORET	Value	
Stream order	84161	4	
Minimum seine mesh diagonal (cm)	89930	0.125	
Maximum seine mesh diagonal (cm)	89931	0.125	
Seine length (m)	89941	4.572	
Electrofishing method (1=boat, 2=backpack)	89943	3	
Electrofishing effort (sec)	89944	1200	
Seining effort (number of hauls)	89947	7	
Combined length of seine hauls (m)	89948	66	
Seining effort (duration, minutes)	89949	2.12	
Ecoregion	89961	27	
Area seined (m ²)	89976	301.8	
Total fish species (n)	98003	9	
Number of sunfish species (n)	98008	2	
Total intolerant species (n)	98010	0	
Omnivore individuals (%)	98017	14.5	
Invertivore individuals (%)	98021	69.4	
Piscivore individuals (%)	98022	16.1	
Individuals with disease or anomaly (%)	98030	0	
Number of native cyprinid species (n)	98032	3	
Individuals as non-native species (%)	98033	3.2	
Total individuals seining (n)	98039	9	
Total individuals electroshocking (n)	98040	53	
Number of benthic invertivores (n)	98052	NA	
Individuals per seine haul (n)	98062	1.3	
Individuals per minute electroshocking (n)	98069	2.7	
Tolerant individuals (except <i>G. affinis</i>) (%)	98070	77.4	

SPECIES LIST AND ABUNDANCE- NEKTON

Date 6/14/2017
 Site Wichita River at FM 810
 TCEQ ID 10145

	Collection Method	(E = electro, S = seine)	E1	E2	E3	E4	ES	S1	S2&3	S4	S5	S6	S7	S8	Seine	
	Collection Effort	(for E: sec; for S: meters)	300	300	300	300	1200	8	8	10	10	10	10	10	66	Overall
STORET	Scientific Name	Common Name					Total								Total	Total
98474	<i>Cyprinella lutrensis</i>	Red shiner	11	5	16	2	34	0	1	0	0	0	0	0	1	35
98437	<i>Cyprinus carpio</i>	Common carp	0	1	1	0	2	0	0	0	0	0	0	0	0	2
98429	<i>Dorosoma petenense</i>	Threadfin shad	0	0	0	0	0	0	5	0	0	0	0	1	6	6
98713	<i>Gambusia affinis</i>	Western mosquitofish	0	0	3	1	4	0	0	0	0	0	0	0	0	4
98562	<i>Ictalurus furcatus</i>	Blue catfish	0	0	0	0	0	1	0	0	0	0	0	0	1	1
99094	<i>Lepomis cyanellus</i>	Green sunfish	1	4	2	2	9	0	0	0	0	0	0	0	0	9
99097	<i>Lepomis macrochirus</i>	Bluegill	0	1	0	0	1	0	0	0	0	0	0	0	0	1
98467	<i>Notropis buchanani</i>	Ghost shiner	1	0	0	1	2	1	0	0	0	0	0	0	1	3
98497	<i>Pimephales promelas</i>	Fathead minnow	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Collected							53								9	62
Total Taxa							7								4	9

Ecoregion 27 Nekton IBI			
Date	07/19/2017	TCEQ ID	10145
Site	Witchita River at FM 810		
	Metric	Value	Score
	Total number fish species	18	5
	Number native cyprinid species	3	5
	Number benthic invertivore species	0	1
	Number sunfish species	4	5
	Number intolerant species	0	1
	Percent individuals as tolerant ^a	4.3	5
	Percent individuals as omnivores	3.7	5
	Percent individuals as invertivores	93.3	5
	Number individuals in sample	--	--
	Individuals per seine haul	22.7	1
	Individuals per min electrofishing	1.69	1
	Percent individuals as non-natives	0.0	5
	Percent individuals with disease or anomalies	0.0	5
	Regional Score and Aquatic Life Use	42	High
	^a not including <i>G. affinis</i>		
Scoring Criteria			
	Exceptional	> 49	
	High	41 – 48	
	Intermediate	35 – 40	
	Limited	< 35	

Nekton Summary Data		
Description	STORET	Value
Stream order	84161	4
Minimum seine mesh diagonal (cm)	89930	0.125
Maximum seine mesh diagonal (cm)	89931	0.125
Seine length (m)	89941	4.572
Electrofishing method (1=boat, 2=backpack)	89943	3
Electrofishing effort (sec)	89944	1200
Seining effort (number of hauls)	89947	6
Combined length of seine hauls (m)	89948	60
Seining effort (duration, minutes)	89949	1.82
Ecoregion	89961	27
Area seined (m ²)	89976	274.3
Total fish species (n)	98003	15
Number of sunfish species (n)	98008	2
Total intolerant species (n)	98010	0
Omnivore individuals (%)	98017	7.9
Insectivore individuals (%)	98021	82.1
Piscivore individuals (%)	98022	9.7
Individuals with disease or anomaly (%)	98030	0.3
Number of native cyprinid species (n)	98032	4
Individuals as non-native species (%)	98033	1.6
Total individuals seining (n)	98039	48
Total individuals electroshocking (n)	98040	332
Number of benthic invertivores (n)	98052	0
Individuals per seine haul (n)	98062	8
Individuals per minute electroshocking (n)	98069	16
Tolerant individuals (except <i>G. affinis</i>) (%)	98070	85

SPECIES LIST AND ABUNDANCE - NEKTON

Date 7/19/2017
Site Wichita River at FM 810
TCEQ ID 10145

	Collection Method	(E = electro, S = seine)	E1	E2	E3	E4	ES	S1	S2	S3	S4	S5	S6	Seine	
	Collection Effort	(for E: sec; for S: meters)	300	300	300	300	1200	10	10	10	10	10	10	60	Overall
STORET	Scientific Name	Common Name					Total							Total	Total
98528	<i>Ctenopharyngodon idella</i>	Grass carp	0	1	0	0	1	0	0	0	0	0	0	0	1
98474	<i>Cyprinella lutrensis</i>	Red shiner	6	45	132	56	239	22	0	1	0	1	2	26	265
98437	<i>Cyprinus carpio</i>	Common carp	0	5	0	0	5	0	0	0	0	0	0	0	5
98713	<i>Gambusia affinis</i>	Western mosquitofish	0	0	7	0	7	16	0	0	0	0	0	16	23
98562	<i>Ictalurus furcatus</i>	Blue catfish	1	4	0	0	5	0	0	1	0	0	0	1	6
98561	<i>Ictalurus punctatus</i>	Channel catfish	3	21	0	1	25	0	0	0	0	0	0	0	25
98341	<i>Lepisosteus osseus</i>	Longnose gar	1	0	0	0	1	0	0	0	0	0	0	0	1
99094	<i>Lepomis cyanellus</i>	Green sunfish	1	4	11	8	24	2	0	0	0	0	0	2	26
99099	<i>Lepomis megalotis</i>	Longear sunfish	0	0	2	1	3	0	0	0	0	0	0	0	3
98450	<i>Macrhybopsis hyostoma</i>	Shoal chub	1	0	0	0	1	0	0	1	0	0	0	1	2
98728	<i>Menidia beryllina</i>	Inland silverside	0	0	0	0	0	1	0	0	0	0	0	1	1
99090	<i>Micropterus salmoides</i>	Largemouth bass	0	0	1	0	1	0	0	0	0	0	0	0	1
98457	<i>Phenacobius mirabilis</i>	Suckermouth minnow	1	0	1	0	2	0	0	0	0	0	0	0	2
98498	<i>Pimephales vigilax</i>	Bullhead minnow	0	2	11	2	15	1	0	0	0	0	0	1	16
98570	<i>Pylodictis olivaris</i>	Flathead catfish	1	2	0	0	3	0	0	0	0	0	0	0	3
Total Collected							332							48	380
Total Taxa							14							7	15

Wichita River at FM 810

TCEQ ID - 10145



Benthic Community IBI Data, Summary Data, and Species Lists

Qualitative Benthos IBI			
Date	6/14/2017	TCEQ ID	10145
Site	Wichita River at FM 810		
Metric	Value	Score	
Taxa Richness	9	2	
EPT Taxa Abundance	3	1	
Biotic Index (HBI)	6.46	1	
% Chironomidae	4.53	3	
% Dominant Taxon	55.47	1	
% Dominant FFG	79.31	1	
% Predators	1.76	1	
Intolerant : Tolerant	0.59	1	
% Total Trichoptera as Hydropsychidae	100	1	
# of Non-Insect Taxa	3	2	
% Collector-Gatherers	79.31	1	
% of Total Number as Elmidae	0.75	1	
AQUATIC LIFE USE SCORE	16		
AQUATIC LIFE USE RATING	Limited		
Scoring Criteria			
Exceptional	>36		
High	29 - 36		
Intermediate	22 - 28		
Limited	<22		

Benthos Summary Data			
Date	6/14/2017	TCEQ ID	10145
Site	Wichita River at FM 810		
Description	STORET	Value	
Stream order	84161	4	
Data reporting units	89899	1	
Kicknet effort (m²)	89903	5	
Kicknet effort (min)	89904	5.03	
Debris/shoreline effort, min picked (min)	89905	0	
Total n for sample (n)	89906	265	
Gravel substrate (%)	89923	80	
Macrophyte bed (%)	89926	0	
Snags and brush (%)	89927	0	
Bedrock (%)	89928	0	
Net mesh size (cm)	89946	0.05	
Benthic sampler	89950	3	
Ecoregion	89961	27	
HBI	90007	6.46	
EPT index (n)	90008	3	
Dominant FFG (%)	90010	79.31	
Collector-gatherers (%)	90025	79.31	
Predators (%)	90036	1.76	
Dominant taxon (%)	90042	55.47	
Intolerant : Tolerant taxa	90050	0.59	
Non-insect taxa (n)	90052	3	
n as Elmidae (%)	90054	0.75	
Taxa richness (n)	90055	9	
Chironomidae (%)	90062	4.53	
Trichoptera as Hydropsychidae (%)	90069	100	

Qualitative Benthos IBI			
Date	7/19/2017	TCEQ ID	10145
Site	Wichita River at FM 810		
Metric	Value	Score	
Taxa Richness	15	3	
EPT Taxa Abundance	7	3	
Biotic Index (HBI)	6.24	1	
% Chironomidae	26.76	1	
% Dominant Taxon	26.76	3	
% Dominant FFG	55.40	1	
% Predators	11.38	4	
Intolerant : Tolerant	0.31	1	
% Total Trichoptera as Hydropsychidae	100.00	1	
# of Non-Insect Taxa	2	2	
% Collector-Gatherers	55.40	1	
% of Total Number as Elmidae	5.99	4	
AQUATIC LIFE USE SCORE	25		
AQUATIC LIFE USE RATING	Intermediate		
Scoring Criteria			
Exceptional	>36		
High	29 - 36		
Intermediate	22 - 28		
Limited	<22		

Benthos Summary Data			
Date	07/19/2017	TCEQ ID	10145
Site	Wichita River at FM 810		
Description	STORET	Value	
Stream order	84161	4	
Data reporting units	89899	1	
Kicknet effort (m²)	89903	8	
Kicknet effort (min)	89904	5.48	
Debris/shoreline effort, min picked (min)	89905	0	
Total n for sample (n)	89906	284	
Gravel substrate (%)	89923	70	
Macrophyte bed (%)	89926	0	
Snags and brush (%)	89927	0	
Bedrock (%)	89928	0	
Net mesh size (cm)	89946	0.05	
Benthic sampler	89950	3	
Ecoregion	89961	27	
HBI	90007	6.24	
EPT index (n)	90008	7	
Dominant FFG (%)	90010	55.4	
Collector-gatherers (%)	90025	55.4	
Predators (%)	90036	11.38	
Dominant taxon (%)	90042	26.76	
Intolerant : Tolerant taxa	90050	0.31	
Non-insect taxa (n)	90052	2	
n as Elmidae (%)	90054	5.99	
Taxa richness (n)	90055	15	
Chironomidae (%)	90062	26.76	
Trichoptera as Hydropsychidae (%)	90069	100	

Physical Habitat IBI Data, Summary Data, and Transect Data

Habitat Quality Index		
Date	06/14/2017	
Site	Wichita River at FM 810	
TCEQ ID	10145	
Metric	Value	Score
Instream Cover, mean (%)	16.17	2
Riffles, number of	2	3
Pools, maximum depth (m)	NA	4
Bank Stability	—	1
Slope component, mean angle (°)	48.60	—
Erosion component, mean (%)	40.42	—
Riparian Buffer Vegetation, mean width (m)	>20	2
Channel Flow Status (4=High, 3=Moderate, 2=Low, 1=No flow)	3	3
Channel Sinuosity	3	3
Bottom Substrate, mean gravel or larger (%)	25.83	2
Aesthetics (1=Wilderness, 2=Natural, 3=Common, 4=Offensive)	2	2
AQUATIC LIFE USE SCORE	22	
AQUATIC LIFE USE RATING	High	
Scoring Criteria		
Exceptional	26 - 31	
High	20 - 25	
Intermediate	14 - 19	
Limited	< 14	

Habitat Quality Index		
Date	7/19/2017	
Site	Wichita River at FM 810	
TCEQ ID	10145	
Metric	Value	Score
Instream Cover, mean (%)	17.17	2
Riffles, number of	2	3
Pools, maximum depth (m)	NA	4
Bank Stability	—	0
Slope component, mean angle (°)	60.63	—
Erosion component, mean (%)	37.92	—
Riparian Buffer Vegetation, mean width (m)	19.58	3
Channel Flow Status (4=High, 3=Moderate, 2=Low, 1=No flow)	3	3
Channel Sinuosity	2	2
Bottom Substrate, mean gravel or larger (%)	14.17	2
Aesthetics (1=Wilderness, 2=Natural, 3=Common, 4=Offensive)	2	2
AQUATIC LIFE USE SCORE	21	
AQUATIC LIFE USE RATING	High	
Scoring Criteria		
Exceptional	26 - 31	
High	20 - 25	
Intermediate	14 - 19	
Limited	< 14	

Critical – Transect 1

(Bottom of reach)



Upstream taken from transect 1 during critical period.



Right bank taken from transect 1 during critical period.



Left bank taken from transect 1 during critical period.



Downstream taken from transect 1 during critical period.

Conclusions



- Beaver Creek at FM 2326 (15120)
 - Listed on 303(d) List for Bacteria and has a high ALU designation
 - Results indicate that 15120 is not supporting high ALU rating for habitat
 - Results indicate that 15120 is supporting high ALU rating for benthos, nekton and Diel DO
- Wichita River at FM 810 (10145)
 - Listed on 303(d) List for Bacteria and has a high ALU designation
 - Results indicate that 10145 is not supporting high ALU rating for benthos or nekton
 - Results indicate that 10145 is supporting high ALU rating for Diel DO and physical habitat

ADDITIONAL MONITORING IS SUGGESTED

Questions



RED RIVER AUTHORITY OF TEXAS



Clean Rivers
Program
Partner since
1991



NELAP
accredited
laboratory
since 2006

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